IN THE CLAIMS

Claims 1-29 (Cancelled)

30. (Currently Amended) A method for investigating specimens, ~~wherein a spectral splitting of the radiation coming from the specimen is carried out for specimen points or point distributions,~~ for the operation of a laser scanning microscope or a fluorescence screening arrangement or a flow cytometer, the method comprising the steps of:

spectrally splitting a radiation coming from the specimen for specimen points or point distributions;

generating a λ-stack from the spectrally split radiation, which includes:

measuring ~~so that~~ the spectral distribution of the spectrally split radiation ~~is measured~~ by individual detection channels of a detector; and

storing ~~the~~ signals ~~so as to be~~ correlated to ~~the~~ detection signals of the detection channels with at least one of ~~the~~ spatial coordinates x, y or z and/or ~~so as to be~~ correlated to ~~the~~ a measurement time t.

31. (Currently Amended)   The method according to claim 30, wherein a plurality of image channels allocated by color or spectral region and color correlation of false color images are generated.

32. (Currently Amended)   The method according to claim 30, wherein region of interests (ROIs) ~~ROIs~~ are marked as relevant specimen areas by means of an input device or automatically.

33. (Currently Amended)   The method according to claim ~~30~~ 32, wherein the ROIs are used to form reference spectra.

34. (Currently Amended)   The method according to claim ~~30~~ 31, wherein a color-coded image is generated by superimposing ~~a~~ the plurality of image channels when a plurality of dyes are contained in a relevant specimen area.

35. (Currently Amended)   The method according to claim ~~30~~ 32, wherein the ROIs are marked as relevant specimen areas by an input device, reference spectra are formed from the ROIs and a color-coded image is generated from the reference spectra by quantitative analysis.

36. (Currently Amended)   The method according to claim ~~30~~ 32, wherein the ROIs are marked as relevant specimen areas by means of an input device and a quantitative analysis is carried out by means of reference spectra from a stored database.

37. (Currently Amended)   The method according to claim ~~30~~ 32, wherein a qualitative analysis is carried out and relevant specimen areas are formed as the ROIs which are used for forming and storing reference spectra.

38. (Previously Presented)   The method according to claim 30, wherein an input device is provided for selecting dyes which are quantitatively analyzed by means of a dye database and are displayed.

39. (Previously Presented)   The method according to claim 38, wherein the dye database is generated by marked ROIs.

40. (Currently Amended)   The method according to claim ~~30~~ 31, wherein ~~the~~ a ratio of the spectral components is formed from a color-coded image formed by superposition of ~~a~~ the plurality of image channels for determining the ion concentrations.

41. (Currently Amended)   The method according to claim 30, wherein the image channels or detection channels corresponding to unwanted signals such as autofluorescence or reflection or nonspecific fluorescence are eliminated.

42. (Currently Amended)   The method according to claim ~~30~~ 35, wherein the λ-stacks corresponding to the measured spectral distribution with individual detection channels are calculated from ~~a~~ the stored color-coded image and ~~a~~ the reference spectrum.

43. (Currently Amended)   The method according to claim 30 32, wherein additional images are formed and/or the ROIs are marked and evaluated from these λ-stacks.

44. (Previously Presented)   The method according to claim 30, wherein the spectral width of the detection within which the spectral distribution is detected collectively and to which an image channel is allocated is variable.

45. (Currently Amended)   The method according to claim 30 32, wherein the spectra are evaluated in the ROIs.

46. (Previously Presented)   The method according to claim 30, wherein adjusting elements are provided for adjusting the spectral width.

47. (Currently Amended)   The method according to claim 30 46, wherein the adjusted spectral width is generated by digital signal combination or electronic combination of detection channels.

48. (Currently Amended)   The method according to claim 30 46, wherein adjusting elements and the spectral width are displayed on a monitor in such a way that the adjusting areas of the adjusting elements are spatially correlated to the spectral width.

49. (Currently Amended)   The method according to claim 30, wherein sliders are provided, whose position on the monitor corresponds to the position of the an associated spectral region.

50. (Currently Amended)   The method according to claim 30 46, wherein the an adjusted wavelength is indicated by adjusting the pointer of a computer mouse on the adjusting element, and the adjusted wavelength area is indicated on the monitor by adjusting between two adjusting elements.

51. (Previously Presented)   The method according to claim 30, wherein a wavelength-dependent display of the temporal behavior of specimen areas or of the entire specimen is carried out on a monitor.

52. (Currently Amended)   The method according to claim 30, wherein a gray scale image is generated from the ~~lambda~~ λ-stack in that the maximum intensity value is determined and displayed for every x,y pixel position over the wavelength regions.

53. (Currently Amended)   The method according to claim 52, wherein, ~~further,~~ every pixel is characterized by the color which corresponds to the mean wavelength of the wavelength region from which the brightest pixel of the ~~lambda~~ λ-stack originates.

54. (Currently Amended)   The method according to claim 30, wherein the individual images of the ~~lambda~~ λ-stack are displayed on a screen at least partially in series so as to overlap adjacent to one another or one behind the other.

55. (Currently Amended)   The method according to claim 30, wherein time-dependent and/or z-dependent views are also generated and displayed in addition to an x,y ~~lambda~~ λ-stack display.

56. (Currently Amended)   The method according to claim 30, wherein the ~~lambda~~ λ-stack is sectioned and the resulting section images are displayed.

57. (Currently Amended)   The method according to claim 30, wherein ~~the~~ quantitative analysis involves an unmixing process.

58. (Currently Amended)   The method according to claim ~~30~~ 57, wherein the qualitative analysis involves a ~~PCA~~ quantative analysis process.